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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,353	12/21/2001	David GenLong Chow	5038-098	5504

7590

04/23/2003

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EXAMINER

TRAN, TAN N

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,353

Applicant(s)

CHOW, DAVID GENLONG

Examiner

TAN N TRAN

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 and 32-44 is/are pending in the application.
- 4a) Of the above claim(s) 27-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 and 32-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-26,32-44 in Paper No. 3 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Objections

2. Claims 2-11,13-19, 21-26, 33-44 are objected to because of the following informalities:

In claims 2-10, line 1, "An apparatus" should be changed to – The apparatus --.

In claims 11,13-19, line 1, "An transmission" should be changed to – The transmission --.

In claims 21-26, line 1, "An integrated" should be changed to – The integrated --.

In claims 33-44, line 1, "An computer" should be changed to – The computer --.

Appropriate correction is required.

Information Disclosure Statement

3. If applicant is aware of any relevant prior art, he/she requested to cite it on form PTO-1449 in accordance with the guidelines set forth in M.P.E.P.

609.

Arrangement of the Specification

4. As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10,12-26,32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bandyopadhyay et al. (5,827,776) in view of Pinneo et al. (2002/0181523).

With regard to claims 1,6,12,20,32,33, Bandyopadhyay et al. discloses a substrate 20; conductive material 26(16) on the substrate; and conductive material 26(16) defining a plurality of spaced lines, opposing sidewalls of the spaced lines defining a distance therebetween less than a height of the conductive material 26(16). (Note figs. 10,11 of Bandyopadhyay et al.).

Bandyopadhyay et al. does not disclose a ground plane; a substrate is a dielectric substrate.

Pinneo et al. discloses a ground plane 34; a dielectric substrate 42 over the ground plane 34. Note fig. 1 of Pinneo et al. It would have been obvious to one of ordinary skill in the art to replace the substrate of Bandyopadhyay et al.'s device by the dielectric substrate mount over the ground plane of Pinneo et al. in order to limit the resistance of the transmission line without unduly enlarging its size.

With regard to claims 2,13,21,35, Bandyopadhyay et al. discloses the height of the conductive material is at least two or 1.5 times the distance between the lines (16,26). (Note figs. 10,11 of Bandyopadhyay et al.).

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With regard to claim 3, Bandyopadhyay et al. discloses the conductive material defines three separate conductive lines 26(16) over the substrate 20, the distance between the lines being less than their height (Note figs. 10,11 of Bandyopadhyay et al.).

With regard to claim 4, Bandyopadhyay et al. discloses a set of interconnect lines electrically connect to "bus" serves as driver. (Note lines 22-29, column 1, figs. 10,11 of Bandyopadhyay et al.).

With regard to claims 5,26, Bandyopadhyay et al. and Pinneo et al. disclose all the claimed subject matter except for inputs of the drivers to the three conductive lines to receive the same signal. However, it would have been obvious to one of ordinary skill in the art to form inputs of the drivers to the three conductive lines to receive the same signal because such structure is conventional in the art for forming multilevel interconnect structure in order to have high density interconnect.

With regard to claims 7-9,14,15,19,34, Bandyopadhyay et al. and Pinneo et al. disclose all the claimed subject matter except for the $h:s$ ratio associated with the height of the conductive lines relative to their spacing therebetween is greater than the $w:t$ ratio multiplied by the relative dielectric constant of the dielectric associated with the width of the center conductive line relative to a thickness of the dielectric. However, it would have been obvious to one of ordinary skill in the art to have the $h:s$ ratio associated with the height of the conductive lines relative to their spacing therebetween is greater than the $w:t$ ratio multiplied by the relative dielectric constant of the dielectric associated with the width of the center conductive line relative to a thickness of the dielectric because such structure is conventional in the art for forming multilevel interconnect structure in order to have high density interconnect.

With regard to claim 10, Bandyopadhyay et al. discloses a second dielectric 18 over and between the conductive lines 26(18). (Note fig. 2 of Bandyopadhyay et al.).

With regard to claims 16-18, 24,25, Bandyopadhyay et al. and Pinneo et al. disclose all claimed invention, except a plurality of amplifiers to drive respective conductive lines of the plurality of conductive lines, and the plurality of amplifiers of the plurality comprise inputs electrically coupled in common to a signal node. However, although Bandyopadhyay et al. and Pinneo et al. do not teach exact the device of the integrated circuit to connect to the plurality of conductive lines as that claimed by Applicant, the device differences are considered obvious design choices and are not patentable unless unobvious or expected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note in re Leshin, 125 USPQ 416.

With regard to claim 22, Bandyopadhyay et al. discloses the plurality of conductive lines 26(16) comprises three, the middle conductive line 16 disposed between two outer conductive lines 26 and comprising a width defined by its opposing sidewalls. (Note figs. 10,11 of Bandyopadhyay et al.).

With regard to claim 22, Bandyopadhyay et al. discloses a conductive layer against the dielectric 18 opposite the plurality of conductive lines 26(16). (Note figs. 2,10,11 of Bandyopadhyay et al.).

With regard to claims 36-41, Bandyopadhyay et al. and Pinneo et al. disclose all claimed invention, except the processor comprising a data buffer, a data receiver, dummy loads, or separate drivers is coupled to the conductive lines. However, although Bandyopadhyay et al. and Pinneo et al. do not teach exact the device of the processor is coupled to the conductive lines as

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that claimed by Applicant, the device differences are considered obvious design choices and are not patentable unless unobvious or expected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious.

Note in re Leshin, 125 USPQ 416.

Claims 11, 42-44, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bandyopadhyay et al. (5,827,776) in view of Pinneo et al. (2002/0181523) and further in view of Park et al. (6,479,399).

With regard to claims 11, 42-44, Bandyopadhyay et al. and Pinneo et al. do not disclose a dielectric is over the conductive lines and dielectric layers has the same dielectric constant.

Park et al. disclose the dielectric 110 is over the conductive lines 106 and dielectric 108a and interlevel dielectric layer have low dielectric constant. (Note lines 25-27, column 1, fig. 3 of Park et al.). Bandyopadhyay et al., Pinneo et al. and Park et al. disclose all the claimed subject matter except for the dielectric layers and dielectric substrate have the same dielectric constant. However, it would have been obvious to one of ordinary skill in the art to form the dielectric layers and dielectric substrate have the same dielectric constant in order to reduce parasitic capacitance between adjacent lines.

Conclusion

6. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tan Tran whose telephone number is (703) 305-3362. The examiner can normally be reached on M-F 8:30AM-5PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TT

April 2003



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